On Accelerating the Ageing of Alloys of Aluminium with Magnesium Under the Influence of Small Admixtures of Silver and Zinc. (On the Causes of the Influences of Small Admixtures on the Kinetics of Ageing of Alloys III)

to the intersection of the conode passing through the point of the composition of the alloy with the isotherm delimiting the phase region which encloses the composition of the alloy, and not the solubility which corresponds to the intersection of the straight line passing through the point of the composition of the ternary alloy parallel to the side of the concentration triangle. If this isotherm is intersected from the side of the concentration triangle at an acute angle and has a large length, then even a unull admixture may bring about appreciable change of the saturation of the solid solution. If the angle of the intersection of the isotherm from the side of the triangle is large and the length of the isotherm is small, even a large admixture will have little influence on the saturation of an ageing alloy. In this second case a change of the kinetics of ageing under the influence of Card 5/6 admixtures can be due to the effect of internal adsorption

out of the effect of the ender adsorption

126-5-3-17/31

On Accelerating the Ageing of Alloys of Aluminium with Magnesium Under the Influence of Small Admixtures of Silver and Zinc. (On the Causes of the Influences of Small Admixtures on the Kinetics of Ageing of Alloys III)

There are 9 figures, 5 tables and 13 references, 7 of which are Soviet, 3 English, 3 German.

ASSOCIATIONS: Ural'skiy gosudarstvennyy universitet imeni A. M. Gor'kogo (Ural State University imeni A.M. Gor'kiy) Sverdlovskiy filial VNIIM (Sverlovsk Branch of VNIIM)

SUEMITTED: July 17, 1957

1. Aluminum-magnesium allous--Aging 2. Silver--Metallurgical effects

3. Zinc--Metallurgical effects

Card 6/6

SOV/126-6-5-6/43

AUTHORS: Arkharov, V.I. and Magat, L.M.

TITLE: The Effect of Small Amounts of Silver or Zino

Impurities on the Process of Ageing In Aluminium-Copper Alloys (O vliyanii malykh primesey serebra ili tsinka na protsess stareniya splavov alyuminiya s med'yu)

(The Problem of the Causes of the Effect of Small Amounts of Impurities on the Kinetics of Ageing of Alloys. ) (K voprosu o prichinakh vlivaniya malykh primesey na

kinetiku stareniya splavov.  $\overline{V}$ )

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 5, pp 804 - 808 (USSR)

This paper is part of a series; for previous work see Arkharov et al. (Ref l). 31 aluminium-comper (0.5-4% Cu) alloys with small amounts of Ag (0.05-0.5%) ABSTRACT: and Zn (0.2-4%) were prepared. Their compositions she given in a table on p 805. Very pure reterials were used to make the alloys. The components were melted in a carbon crucible at about 900 °C. Cast impots were compression-deformed by 75%, ennealed at 550 °C for

10-20 hours and quenched in water. Experiments were carried out on these alloys to determine the effect of

Cardl/4 Ag and Zn: (A) on ageing of aluminium-copper alloys

SOV/126-6-5-c/43

The Effect of Small Amounts of Silver or Zinc Impurities on the Process of Ageing in Aluminium-Copper Alloys (The Problem of the Causes of the Effect of Small Amounts of Injurities on the Kinetics of Ageing of Alloys.  $\overline{I}$ )

by finding the dependence of the lattic constants of the alloys on the duration of ageing (Figures 1, 2) and, (8) on solubility of copper in aluminium, by finding the dependence of the lattice constants of the Al-Cu alloys on the Cu content (Figure 3). The samples used in the (A) tests were hardened and aged at 245 C and those used in the (B) tests were hardened, compression-deformed by 75%, samealed at 300 and 400 C for 60 and 20 hours, respectively, hardened again and seed at 245 C. A KROS-1 X-ray camera, with copper radiation (X<sub>x1</sub> lines),

was used to obtain the lattle constants vithin + 0.0005 kX units. The results are given in Figures 1-3. Figure 4 shows the Al corner of the Al-Cu-In phase diagram at 460°C. The authors make the following conclusions from the results obtained. 1) Addition of Ag (0.05-0.5%) and Zn (0.2%) was found to have a weak decelerating effect on decomposition of the supersaturated solution of copper in aluminium during the initial loans

Card2/4

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001031330001-9"

SOV/126-6-5-6/43

The Effect of Small Amounts of Silver or Zinc Impurities on the Process of Ageing in Aluminium-Copper Alloys (The Problem of the Causes of the Effect of Small Amounts of Impurities on the Kinetics of Ageing of Alloys.  $\overline{Y}$ )

of ageing at 245 °C. 2) Introduction of Ag or Zn into the Al + 4% Cu alloy which is being aged increases solubility of Cu in Al. This increase of solubility is small when small amounts of Ag or Zn are added but it becomes considerable when larger amounts of the impurities are used. It follows, therefore, that the decelerating effect of Ag and Zn on ageing of the Al-Cu alloys cannot be explained by a change in the degree of supersaturation of the solid solution as a whole. 3) The decelerating effect of small amounts of Ag or Zn is ascribed to their internal adsorption on pre-transition formations in the supersaturated solid solution. Such an adsorption increases solubility of copper in the regions which are rich in Ag or Zn and slows down formation of nuclei of the new phase.

Card3/4

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001031330001-9"

BOV/126-6-5-6/43

The Effect of Small Amounts of Silver or Zinc Impurities on the Process of Ageing in Aluminium-Copper Alloys (The Problem of the Causes of the Effect of Small Amounts of Impurities on the Kinetics of Ageing of Alloys. Y)

There are 4 figures, 1 table and 7 references, 6 of which are Soviet and 1 English.

ASSOCIATIONS: Institut fiziki metallov Ural'skogo filiala AN SSSR

(Institute of Metal Physics of the Ural Branch of

the Ac.Sc.USSR)

Sverdlovskiy filial VNIIM (Sverdlovsk Branch

of vNIIM)

SUBMITTED: February 26, 1958

Card 4/4

AUTHORS:

Arkharov, V.I., and Magat, L. .. SOV/126-6-5-7/43 The Simultaneous Effect of Small Amounts of Cairium TITLE: and Silver or Zinc Impurities on the Process of Ageing

of Aluminium-Copper Alloys (O sovmestnom vliyanii malykh primesey kadmiya i serebra ili tsinka na protsess stareniya splavov alyuminiya s med'yu) (The Problem of the Causes of the Effect of Small Amounts of Impurities on the Kinetics of Ageing of Allays. VI) (K voprosu c

prichinakh vliyaniya malykh primesey na kinetiku

stareniya splavov. VI)

PERIODICAL: Fizika Metallov i Metallovederiye, 1958, Vol 6,

Nr 5, pp 809 - 811 (USSR)

ABSTRACT: For Part V, see the preceding paper (Ref 1). Eight aluminium-copper (4% Cu) alloys were prepared with small amounts of Cd (0.05%), Cd-Ag (together) (0.05-0.3% Ag) and Cd+Zn (0.5 - 1.0% Zn). The technique of preparation and testing of the samples was described by the authors

in Part V (Ref 1). They studied the simultaneous effect of Cd+Ag or Cd+Zn on ageing of Al-Ju alloys at the stages when Cd accelerates, while Ag and Zn slow down decomposition of the supersaturated solid solution in

these alloys. The effect of Cd, Ag and Zn was deduced Cardl/3

SOV/126--6--5--7/43 The Simultaneous Effect of Small Amounts of Cadrium and Silver or Zinc Impurities on the Process of Ageing of Aluminium-Copper Alloys (The Problem of the Causes of the Effect of Small Amounts of Impurities on the Kinetics of Ageing of Alloys)

from curves (Figures 1 and 2) showing the dependence of the duration of agains at 245 °C. the lattice constant on the duration of ageing at 245 It was found that 0.03% Cd accelerates ageing of the Al+4% Cu alloy at 245 °C (Figure 1, Curve 1). Addition of Ag to the Al+4%Cu+0.05%Cd alloy decreases the effect of Cd (Figure 1, Curves 2-5). The accelerating effect of Cd decreases with increase of the amount of Ag until of O.5% Ag the officet of Cd is accelerating with the officet of Cd is accelerating effect. at 0.5% Ag the effect of Cd is completely rullified, (Figure 1, Curve 5). It is suggested that the simultaneous action of Ag and Cd is due to internal adsorption of these two metals in aluminium-copper alloys. Addition of Zn to the Al+4%Ou-C,05%Ci alley has only a very small effect on the rate of decomposition of the solid solution in the alloy (Figure 2). There are 2 figures, 1 table and 8 references, 4 of which are Soviet and 4 English.

Card2/3

SOV/126-6-5-7/43

The Simultaneous Effect of Small Amounts of Cadmium and Silver or Zinc Impurities on the Process of Ageing of Aluminium-Copper Alloys (The Problem of the Causes of the Effect of Small Amounts of Impurities on the Minetics of Amounts of Impurities on the Kinetics of Ageing of Alloys)

Institut fiziki metallov Ural'skogo filiala AN SSSR ASSOCIATIONS:

(Institute of Metal Physics of the Ural Branch of

the Ac.Sc.USSR)

Sverdlovskiy filial VNIIM (Sverdlovsk Branch

of VNIIM)

February 26, 1958 SUBMITTED:

Card 3/3

6970 s/126/60/009/03/028/033 E032/E414 18.1141 Glazer, A.A., Magat, L.M. and Shur, Ya.S. AUTHORS: Thermomagnetic Treatment and Ordering Processes. IV. A Study of the Effect of Thermomagnetic Treatment on TITLE 8 the Crystal Lattice Parameter Vin the Case of Ordering 18 Soft Magnetic Alloys PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 3, pp 467-469 (USSR) It has been shown experimentally that thermomagnetic ABSTRACT: treatment (cooling in a magnetic field) in the case of soft magnetic materials, which leads to the appearance in the ferromagnetic of single axis magnetism, is effective only in ordering alloys. In the present work, a study was made of the crystal lattice parameter in the case of 78-permalloy (78% Ni, 22% Fe) and perminvar (34% Fe, 29% Co, 34% Ni, 3% Mo). The specimens were in the form of strips  $60 \times 4 \times 0.2$  mm. The magnetic and electrical properties of the specimens were reported earlier (Ref 1,2). The lattice parameter was determined for specimens in different structural states namely. disordered, ordered, after thermomagnetic treatment, and Card 1/3

69702

S/126/60/009/03/028/033 E032/E414

Thermomagnetic Treatment and Ordering Processes. IV. A Study of the Effect of Thermomagnetic Treatment on the Crystal Lattice Parameter in the Case of Ordering Soft Magnetic Alloys

after annealing in the absence of the field. The disordered specimens were obtained by quenching from 700° and the ordered by 100-hour annealing at 450°. Thermomagnetic treatment consisted in the cooling of the specimens from 700 to 300° in a field of 200 oersted. The lattice parameter was determined by X-ray diffraction methods. The results obtained are summarized in a table on p 469 for 78-permalloy and perminvar specimens after the following heat treatments: quenching from 700°C (disordered), annealing at 450°C for 100 hours (ordered), cooling from 700°C at the rate of 200°C/hr in a magnetic field, cooling from 700°C at the rate of 200°C/hr with the field on. The following values are given:  $H_c$ : 0e (2nd and 5th columns);  $\lambda_s$ .106 (3rd and 6th columns) and the lattice parameter at 20°C in Å (4th and 7th columns). As can be seen from this table, thermomagnetic treatment has very little effect on the lattice parameter. This indicates that the structural

Card 2/3

69703

S/126/60/009/03/028/033 E032/E414

Thermomagnetic Treatment and Ordering Processes. IV. A Study of the Effect of Thermomagnetic Treatment on the Crystal Lattice Parameter in the Case of Ordering Soft Magnetic Alloys

changes which take place on annealing in a field, appear to confirm the hypothesis that only a small proportion of atoms take part in the setting up of the single axis magnetism which is produced as a result of thermomagnetic treatment. The usual ordering process does not play an important part in the mechanism of thermomagnetic treatment. There are 1 table and 4 references, 3 of which are Soviet and 1 English.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals AS USSR)

SUBMITTED: July 15, 1959

Card 3/3

4

5/126/62/013/002/004/019 E073/E535

12.1142

Magat, L.M., Luzhinskaya, M.G. and Shur, Ya.S. AUTHORS:

Change in the magnetic and crystalline structure of TITLE:

Vicalloy during tempering

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.2, 1962,

192-198

To elucidate the nature of the high coercive force of TEXT: Vicalloy, further structure investigations combined with measurement of the basic magnetic characteristics are necessary. The authors carried out X-ray diffraction studies of the fine structure of the alloy, determining the dimensions of the mosaic blocks and the size of micro-deformations corresponding to type II. stresses. In addition, the coercive force, the saturation magnetization and the residual magnetization were measured, as well as the hardness of the specimens. In the experiments an alloy containing 12% V, 52% Co, rest Fe was used. The specimens were first drawn with a large reduction so that after a suitable heat treatment, optimum magnetic properties were obtained. The measurements were made on specimens that had been tempered within Card 1/#

Change in the magnetic ...

S/126/62/013/002/004/019 E073/E535

a wide range of temperatures (300 to 650°C). The magnetic characteristics were measured ballistically on cylindrical specimens and, after these measurements, flat specimens were cut from the cylindrical ones for X-ray analysis and hardness tests. Fig.1 shows the dependence of micro-deformations  $\Delta$  a/a and of the block size D of the  $\alpha$ -phase, the hardness  $H_D$  (kg/mm<sup>2</sup>), the coercive force H (Oe) and of the quantity  $4\pi\,I_s$ , and of the residual force H<sub>c</sub> (Oe) and of the quantity 471, magnetization  $j_r$  of Vicalloy on the tempering temperature,  ${}^{\circ}C$ , for a holding time of one hour. Fig.2 gives curves of the same values as Fig.1 for a constant tempering temperature of  $580\,^{\circ}\text{C}$ as a function of the holding time, hours. It was found that the high coercive force  $H_{c}$  is associated with a certain stage of formation of the non-ferromagnetic  $\gamma$ -phase, which is accompanied by a change in the block dimensions and the micro-deformations of the ferromagnetic  $\alpha$ -phase. In the high coercive state of the alloy, the dimensions of the blocks of the  $\alpha$ -phase are of the order of hundreds of Angstrom, which corresponds to the predicted theory of the dimensions of single-domain formations. The size of the  $\gamma$ -phase blocks are of the same order. Comparing the Card 2/5

Change in the magnetic ...

S/126/62/013/002/004/019 E073/E535

results with those of studies of the magnetic properties, the mechanism of formation of a high coercive force in Vicalloy is explained as follows. In the untempered state, the alloy has a multi-domain magnetic structure. During low temperature tempering, the  $\gamma\text{-phase}$  forms along the boundaries of the  $\alpha\text{-phase}$ blocks in the form of thin interstices which constitute a barrier against displacement of the boundaries between the domains. Therefore, even for small quantities of the  $\gamma$ -phase, the magnetic structure will approach the single domain structure. If the tempering temperature and the quantity of  $\gamma$ -phase are increased. the magnetic structure becomes a single domain one due to a further splitting of the  $\alpha\text{-phase}$  blocks by the  $\gamma\text{-phase}$  and to a reduction of the dimensions of the  $\alpha$ -phase blocks. high temperature tempering, the dispersion of the phases decreases and the conditions for the existence of a single domain magnetic structure cease to exist. Thus, the increase in H is due to the development of a single domain structure. Of considerable importance also is the magneto-crystalline anisotropy of the  $\alpha$ -phase, which is small after low temperature Card 3/5

Change in the magnetic ...

S/126/62/013/002/004/019 E073/E535

tempering and reaches maximum values at tempering temperatures that are higher than those which are suitable for obtaining a single domain magnetic structure. Maximum H values are obtained if in addition to the existence of a single domain structure, the material has a sufficiently large natural crystalline magnetic anisotropy. There are 2 figures and 1 table.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals, AS USSR)

SUBMITTED: May 5, 1961

Card 4/5

S/126/62/014/003/016/022 E073/E420

AUTHORS: Shur, Ya.S., Magat, L.M., Yermolenko, A.S.

TITLE: On the relation between the crystal structure and the

magnetic properties of alnico

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.3, 1962,

458-461

TEXT: So far, the nature of the structural transformations which lead to a reversible change in the magnetic properties of alnico has not been resolved and the authors considered it of interest to try to observe these transformations by accurate measurement of the lattice parameters and a determination of the average distance between defects from the positions of the satellites on the X-ray spectra. Specimens in the form of discs and plates cut from single crystals in the plane (100) of the alloy (24% Co, 14% Ni, 8% Al, 3% Cu, remainder Fe) were used in studying the temperature dependence of the coercive force and the saturation magnetization by means of a rotary magnetometer. It was found that these properties do not depend on the preceding heat treatment but are determined solely by the last tempering temperature, which Card 1/3

On the relation between ...

S/126/62/014/003/016/022 E073/E420

indicates that the magnetic properties of coherent defects and of the matrix change reversibly with changing temperature. Regardless of the previous heat treatment, tempering at 560°C led Further heating to to the same value of the lattice parameters. higher temperatures brings about an increase in the lattice parameter which approaches the value pertaining to a specimen quenched from 1250°C; tempering at 560 to 750°C leads relatively quickly to a certain state of the solid solution for each temperature regardless of the previous heat treatment. It is concluded that when cooling from 1250°C at a critical rate defects form which are coherently interconnected with the matrix and are distributed more or less periodically; the lattice parameter of the solid solution decreases somewhat which probably occurs owing to defects in the  $\gamma_2$  phase. Due to these structural changes, the coercive force increases. Tempering at 560°C leads to a further change in the state of the solid solution and to a redistribution of the components between the matrix and The obtained data indicate that the the coherent defects. reversible changes in the saturation magnetization and the Card 2/3

On the relation between ...

S/126/62/014/003/016/022 E073/E420

coercive force of alnico are due to reversible changes in the state of the matrix and coherent defects corresponding to the equilibrium phases  $\beta_2$  and  $\beta_1$  the irreversible changes in the coercive force are due to irreversible growth of coherent defects. There are 1 figure and 1 table.

ASSOCIATION: Institut fiziki metallov AN SSSR

(Institute of Physics of Metals AS USSR)

SUBMITTED: July 11, 1962

Card 3/3

# MAGAT, L.M. Some diffusion effects near superstructural reflections on X-ray photographs of the almico alloy. Ukr. fiz. zhur. 8 no.2:270-272 f 563. (MIRA 16:2) 1. Institut fiziki metallova AN Sosk, Sverdlovsk. (Radiography) (Aluminum-nickel-cobalt alloys)

S/126/63/015/001/006/029 E039/E435

AUTHOR:

Magat, L.M.

TITLE:

On the initial stages of disintegration of super-

saturated solid solutions in alloys of the alnico type

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.1, 1963,

60-62

The initial stages of the process of separation of the TEXT:  $\beta$ -phase with time of annealing after hardening was investigated by means of X-ray diffraction for single crystals of an alloy containing 51% Fe, 24% Co, 14% Ni, 8% Al and 3% Cu (by weight). The samples were water quenched from 1250°C. The period of modulation was determined from the position of satellites in the X-ray diffraction pattern and the size of the spherical Guinier-Preston (C.P.) zones from the diffusion effect near the super-Typical results are: for the hardened lattice reflections. sample, size of G.P. zone 60 to 80 kX and period of modulation 200 kX. After annealing for 40 hours at 550°C these values are 90 and 200 kX respectively and after 2 hours at 670°C 200 and 270 kX. This illustrates that annealing at less than Card 1/2

S/126/63/015/001/006/029 E039/E435

On the initial stages ...

 $600\,^{\circ}\text{C}$  for tens of hours increases the size of the G.P. zone without a corresponding increase in the period of modulation. It is concluded that in this alloy the separation of the  $\beta$ -phase begins with the formation of spherical G.P. zones followed by the formation of a modulated structure. There are 1 figure and 1 table.

ASSOCIATION: Institut fiziki metallov AN SSSR

(Institute of Physics of Metals AS USSR)

SUBMITTED: June 26, 1962

Card 2/2

ACCESSION NR: AP4017367

s/0126/64/017/002/0296/0298

AUTHORS: Magat, L. M.; Shur, Ya. S.; Melkisheva, E. N.

TITLE: The relation of the coercive force to the initial decomposition stages in an oversaturated solid solution in the alnico alloys

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 2, 1964, 296-298

TOPIC TAGS: alnico alloy, alni alloy, niobium-alnico alloy, alloying, oversaturated solid solution, solution decomposition, coercive force, modulation period, Guignet-Preston zone, tempering

ABSTRACT: The following alloys were studied by the method of x-ray analysis: alni (30% Ni, 14% Al); alnico (14% Ni, 8% Al, 24% Co, 3% Cu); Nb-alnico (14% Ni, 8% Al, 24% Co, 3% Cu, 0.9% Nb). The size of the spherical Guignet-Preston zones was determined from the scattering of x-rays in the Laue diffraction pattern, and the modulation period was determined from the position of satellites on the x-ray patterns of rotation. The coercive force was measured ballistically. Figure 1. on the Enclosure shows the results obtained. It was ascertained that the decomposition of a solid solution during tempering started with the formation of the Guignet-Preston zones which were replaced subsequently by a periodical modulation structure.

Card 1/3

ACCESSION NR: AP4017367

51"

The growth of the coercive force during tempering started during the formation of the Guignet-Preston zones and reached its maximum during the second stage at a certain optimal magnitude of the modulation period. The above conclusions were true for all the types of the alloy studied. It was also proved that the satellites observed on the x-ray patterns of rotation correspond to a periodical modulated structure. Orig. art. has: 2 tables and 3 figures.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals, AN SSSR)

SUBMITTED: 10Jul63

DATE ACQ: 18Mar64

ENCL: 01

SUB CODE: ML

NO REF SOV: 004

OTHER: 004

Card 2/3

ACC NR: AP5025341	SCURCE CODE:	UR/0126/65/020/0	03/0478/0480	
UTHOR: Magat, L. M.				8
RG: Institute of Metal F	hysics, AN SSSR (Ins	titut fiziki metal	Lov an USSR)	3
TTLE: On the initial dec	composition stages of	a saturated solid	solution in	
lloys based on an iron-ni	ckel-aluminum system			
Ormon		20 mg 2 made		12
OURCE: Fizika metallov i	. metallovedenlye, v.	20, 110. 3, 1965,	478–480	11. 13.
OPIC TAGS: iron base all	oy, nickel containin	g alloy, aluminum o	ontaining alloy	,
itanium containing alloy,				
tempering, x ray scatter:	ing			100
BSTRACT: This study deal	s with the diffusion	scattering of x-ra	ys during the	
ecomposition of saturated				
lloys in which it is poss	ible to observe the	gradual transition	from the spheri	.caı
ones of Guingnet-Preston	to the modulated str	ucture. Also inves	tigated were al	·rox
onocrystals of 59% Fe, 28	% N1, 12% AI, 1% T1	and 54% Fe, 29% NL	, 12% A[*, 5% CO,	
nd 1% Ti. After temperin	ig the sample of Fe-N	1-AX-Ti alloy in Wa	iter from 1280 C	
he x-ray of stationary cr	ystals around 100 di	ffractions shown r	Lng-like dirrus:	on
ffects with some nonunifor	rm distribution of 1	ntensity around the	ring. At iiu	

L 26633-66					
ACC NR: AP5025341				0	and the
diffractions very weak sat to 600°C for a period of o phenomena were observed in decomposition process is a effects and satellites has alloys on the x-ray films coherent separations. Or	ne hour the sa alloys with to comewhat slower been establis by means of pe	tellites were he addition of . The simulta hed with Fe-Ni riodic space a	clearly visible.  5% cobalt; howeneous presence of AF-Ti and Fe-Nirangement of the	Similar ver the if ring-like -A/-Co-Ti	
concrent generations. Hri	o. arr. hage				
SUB CODE: 11,20/SUBM DATE:					
1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 +					

ACC NR: AP6027783	WP(w)/EWP(t)/ETI/EWP(k) IJP(c) JD/JH SOURCE CODE: UR/0126/66/022/001/0039/004	14 3/
AUMHOR: Shur, Ya. S.; Kandauro	ova, G. S.; Magat, L. M.; Bykhanova, N. N.	44
omversity im. A. M. Gorkiy (Ur	$\mathcal{A}_{1}$	ite
NITLE: Magnetic properties of po	owders of a high-coercivity Mn-Al alloy	
SOURCE: Fizika metallov i metall	lovedeniye, v. 22, no. 1, 1966, 39-44	
TOPIC TAGS: aluminum alloy, managnetic coercive force	agnesium alloy, powder metal property, magnetic p	roperty,
ne coercive force of Mn-Al alloy womposition of powders of a Mn-Al cle size (2 to 800 \( \mu \)) and heat treateries was obtained by pulverizing ation at 1100°C with cooling in air	the mechanism of the processes leading to the increwhen in powdered state, the magnetic properties and alloy (71 wt. % Mn) were investigated as a function timent. Two series of powders were considered: the the alloy when it was in ferromagnetic state (homogratic at the critical rate of 20°C/sec, leading to the formatic to phase); the second series was obtained by present the second series was obtained the s	d phase of part- first geni- sation of
ard 1/3	UDC: 538.245/.248	

\_ L 09006-67 -ACC NR: AP6027783

izing the alloy when it was in nonferromagnetic state (quenching in water following homogenization at 1100°C) and in this case the high-temperature paramagnetic € - phase was deformed by supercooling. The magnetic properties of the specimens were measured in fields of up to 32,000 oe by the ballistic method, while their phase composition was determined from debyegrams. Findings: for both series of powder specimens coercive force H c increases and specific magnetization  $\sigma_{\max}$  decreases with decrease in particle size. Thus, a particle size decreases from 500 to 2  $\mu$ ,  $H_c$  increases from 1300-2000 oe to 5000 oe, while specific magnetization then decreases 4-7 times for powders in the first series and about 2 times for powders in the second series. An examination of the anisotropy of coercive force in the specimens warrants the assumption that for specimens with particle size of <4 µmagnetic properties are primarily determined by particles with a nearly monodomain structure, and it is this that accounts for the increase in coercive force. The decrease in specific magnetization with decrease in particle size is attributed to the dis-ordering of the magnetic \u03c4-phase and the formation of paramagnetic equilibrium phases. Deformation of the alloy apparently leads to a decrease in the effective dimension of ordered regions of the ferromagnetic T-phase and to greater isolation of these regions from each other within the powder particles. This complicates the processes of magnetization reversal and increases the coercive force. The decrease in the effective size of the T-phase may be attributed, for the first series of powders, to local dis-ordering of the \u03c4-phase during pulverization of the alloy in ferromagnetic state, and for the

consider it d	neir pleas:	rs to the for int duty to exp , art, has: 2 f	ress their a <sub>l</sub>	opreciation to				-
SUB CODE:	11.15,20/	SUBM DATE:	01Dec65/	ORIG REF: (	002/ OTH	REF: 005		
	(-1		·		•			
•								
							•	
			•					
	•					•.		
Card 3/3	nst							

MAGATAYEV, K. S.

Magatayev, K. 3. - Determination of Age Sectiments in the Dil-Fraducing Provinces of the Dagestan ASSR.

The Sixth Session of the Committee for Determining the Absolute Age of Geologic Formations at the Department of Geologic-Geographical Sciences (OGGN) of the USSR Academy of Sciences at Sverdlovsk in Mar 1957

Izv. Ak Rauk SSSR, Ser. Geol., No. 1, 1958, p. 115-117 author Pekarakaya, T. B.

1776,414/EU/F.S

AUTHORS:

Amirkhanov, Kh. I., Member of AN Azerb.

20-4-37/52

SSR, Magatayev, K. S., and Brandt, S. B.

TITLE:

Determination of the Absolute Age of Sedimentary Minerals by Radioactive Methods (Opredeleniye absolyutnogo vozrasta

osadochnykh mineralov radioaktivnymi metodami).

PERIODICAL:

Doklady AN SSSR, 1957, Vol. 117, Nr 4, pp. 675-677 (USSR)

ABSTRACT:

Though most of the works deal with the determination of the age of eruptive rocks and minerals, the primary conditions of radioactive geochronometry can also be applied with depositions. That requires that a precipitating mineral contains a radioactive mother-rock, and further that the developing daugther-rock remains well conserved in the mineral and that it is not contained in the mineral in the moment of precipitation. Finally it is required that the moment of formation of the respective mineral agrees with the

moment of formation of the respective mineral agrees with the moment of precipitation of all other sediments of the respective horizon containing it. Since the absolute age of the sylvinite could be determined (reference 1), this problem was attacked with respect to an authigenic mineral glauconite (reference 2). The age of 45 samples, altogether, was determined. 26 measurements agree quite precisely with the

Card 1/3

Determination of the Absolute Age of Sedimentary Minerals by Radioactive Methods

20-4-37/52

geological data. In 11 samples, radiogenic argon was not found, whereas in 8 cases - on account of too small quantities of argon - the rocks are of lower age. In no case an increased age was determined. From this it can be concluded that radiogenic argon was fully obtained in many samples. This obtaining concerns a wide range of geologic ages. In one part of the samples, the quantity of radiogenic argon was rigorously reduced up to completely lacking. The respective results are given in table 1. The age varies accordingly from 20 (Chokrak, miocene) to 400 (silurian) million years. The too small quantity of radiogenic argon can be attributed to paleo-temperature effects, metamorphic processes, local warming-up and weathering with glauconite. They act here more intensely than with magmatic rocks. Concluding, the applications of the new method are described. There are 1 figure, 1 table, and 5 references, 4 of which are Slavic.

Card 2/3

Determination of the Absolute Age of Sedimentary 20-4-37/52 Minerals by Radioactive Methods

ASSOCIATION: Daghestan Branch AN USSR (Dagestanskiy filial Akademia nauk

SSSR)

SUBLIPTED: July 2, 1957

AVAILABLE: Library of Congress

0 ard 3/3

MAGATATEV, K.S.; MUSSAYEV, S.E.; MIRZOYEV, D.A.

Development of feological prospecting on the plains of northern
Daghestan. Trudy Geol. inst. Dag. fil. AN SSSR 2:88-97 160.

(MIRA 15:12)

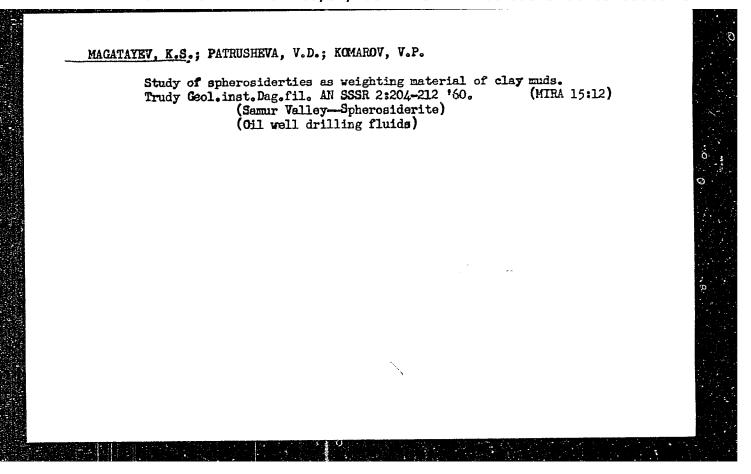
(Daghestan—Prospecting)

TIMOFETEV, G.I.; MAGATATEV, K.S.

Qualitative and quantitative characteristics of bitumens in
Bathonian and Bajocian sediments of Daghestan. Trudy Geol. inst.
Bathonian and SSSR 2:105-110 '69. (MIRA 15:12)
Dag.fil. AN SSSR 2:105-105 Mitumen.—Geology)

TIMOFETEV, G.I.; MACATAYEV, K.S.

Hitrogen and the ratio of carbon to nitrogen in Bathonian and
Bajocian sediments of Daghestan and their importance in the
delineation of oil producing series. Trudy Geol.inst.Dag.fil.
AN SSSR 2:118-127 %60.
(Daghestan—Petroleum geology)
(Daghestan—Rocks, Sedimentary—Analysis)



S/169/62/000/010/018/071 D228/D307

:EMORTUL.

mirkhanov, Kh.I., Dzhamalov, S.A., Magatayev, K.S.,

Lusayev, S.Ye. and Bydtayev, A.B.

TITLE:

Geothermal investigations in Dagestan

rERIODICAL:

Referativnyy zhurnal, Geofizika, no. 10, 1962, 17-18, abstract 10Alll (In collection: Probl. geotermii i prakt. ispol'zovaniya tepla Zemli, v. 2. M., AN SSSR,

1961, 167-170)

Dagestanskiy filial Al SHER (Dagestan Branch, AS USSR) on the study of geothermal phenomena in the region of Dagestan's Tertiary deposits. Upper Cretaceous and Tertiary deposits in the plains part of the territory are the most perspective for hot water. The following tentative conclusions were drawn on the basis of this research.

1. The temperature growth magnitude decreases with depth. 2. Deep temperature changes depend on the underground water movement. The heat conductivity of wet rocks is very much higher, so that the

Card 1/2

Geothermal investigations ...

S/169/62/000/010/018/071 D228/D307

temperature leveling in them proceeds more intensively. 3. It can be established from graphs of the temperature change with depth in different areas, and from geothermal charts compiled by the Dagestan Branch, AS UBSR, that a region's geologic structure does not always correspond to the temperature change.

Abstracter's note: Complete translation 7

Card 2/2

# MAGATH, A. Infiltration enesthesia in combination with intravenous in gymegologic surgery. Bratisl. lek. listy 30 no.3:216-225 Mar. 1950. 1. Of the Obstetrical and Women's Department of the State Hospital in Humenne.

MAGATH A.

Cinnost' prenatelnej poradne a jej kriteria. Activity of prenatal consultation and its criteria, Sloven, leker 12:6 June 50 p. 302-15.

1. Of the Consultation Center for Prognant Women of the Mational Institute of Health in Europea.

CLEL Vol. 20, No.2 Feb 1951

Certain provisions for the improvement of health services for women. Lek. obzor 3 no.3-4:180-185 1954.

1. Z gynekologicko-porodnickeho odd. OUNZ v Humennom.

(MATERNAL WELFARE,

\*in Czech.)

(GYMECOLOGY,

\*in Czech., organiz. of med. care)

MAGATH. A. OUNZ, Trnava

Principles of examination at antisterility consultation centers. Lek. obsor 3 no.7-8:391-398 1954.

1. Z antisterilitnej poradne pri ginekologickom oddeleni OUNZ - Okr. nemocnice v Huzennom (STERILITY, diagnosis exam. principles at constultation centers)

```
MAGATH, A., OUNZ, Trnava

Occurence of uterus rupture during labor. Lek obzor 3 no.7-8:416-419 1954.

1. Z gyn. por. oddelenia OUNZ Humenne
(UTERUS, rupture
in labor, statist. Czech.)
(LABOR, complications
rupt. of uterus, statist. Czech.)
```

# MAGATH, A. Clinico-anatomical considerations on hemorrhagic cervical erosions. Bratisl. lek. listy 34 no.8:915-922 Aug 54. 1. Z Gynekologicko-porodnikeho odd. OUNZ v Humennom, prednosta dr. A. Magath. (CERVIX, UTERINE, diseases, erosion, contract hemorrhagic, cytol. aspects) (UTERUS, hemorrhage, causing cervical erosion, cytol. aspects)

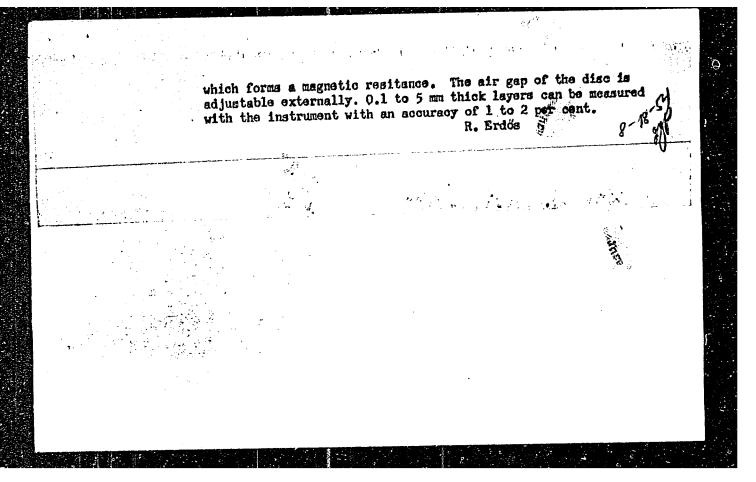
4 (

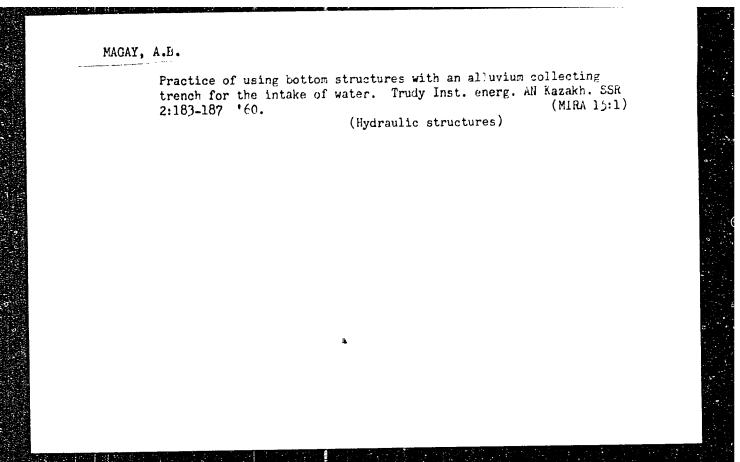
# EXCERPTA MEDICA Sec.16 Vol.4/12 Cancer Dec 56

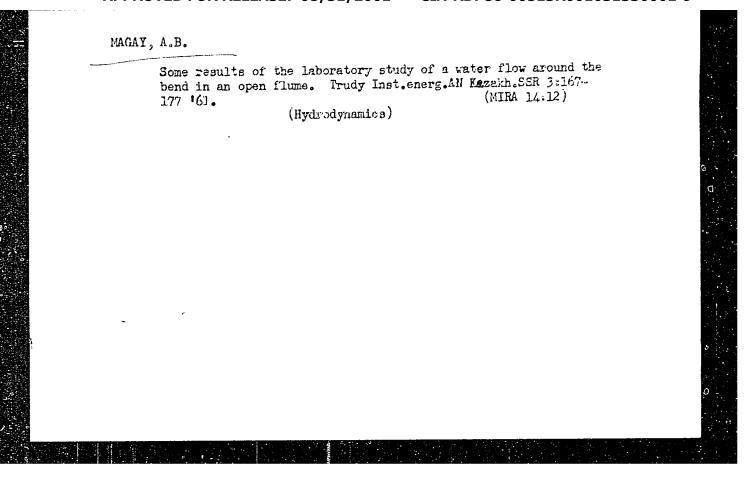
4479. MAGÁTH A. Patol.-Anat. Úst., Univ. Karlova, Bratislava: Gynckol.-Pórodn. Odd. OUNZ-Nemocnice, Trnava. Kotázkam histopatologie a klinického hodnotenia premalignych zmien na jazyčku maternice The histopathology and clinical evaluation of premalignant changes of the cercix Lek. Obzor, 1955, 4-10 (580-588) Illus, 4 A total of 1469 cervical biopsies from 32 gynaecological departments, with the diagnosis of suspect erosion, were examined: 1192 cases (80%) were unsuspect, 194 (14%) were carcinomas, 93 (6%) were not quite normal and required further observation. The author received a report of the further course of 29 cases. Later on various operations were carried out in some of these patients, in I case vaginal hysterectomy on account of uterine prolapse, in 5 abdominal hysterectomy, and in 1 amputation of the cervix because of leucoplakia). No malignant changes were observed in the operation specimens. Twenty patients were not operated on: 15 of them showed a normal cervix at examination, 3 had unsuspect erosions, and in 2, suspect erosion was again diagnosed; I of these proved benign and the other was followed up. In only one case, biopsy after 2.5 months revealed infiltrative carcinoma. At operation (according to Wertheim) the parametrium was shown to be Janisch-Raskovic - Berlin infiltrated.

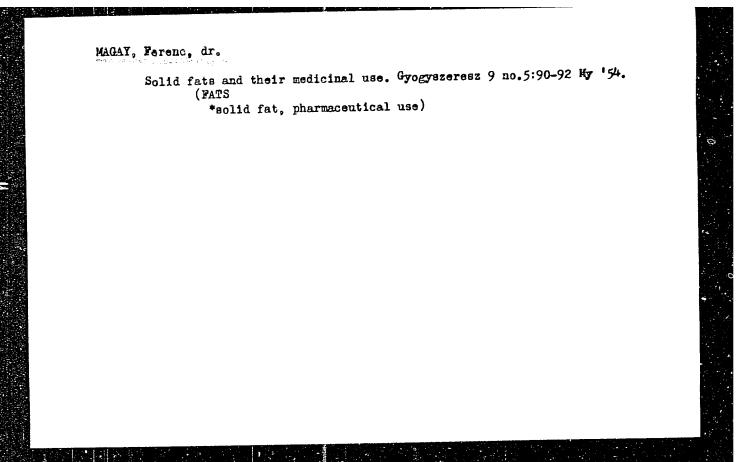
MAGAY, A. 16. Two gauge heads manufactured in Hungary - Ket hezailag gyartott tapintofe) - A. Magay. (Hungarian Engineering - Magyar Technika - Vol. 7, 1952, No. 12, pp. 701 - 703, 4 figs.)

Both of these instruments operate on the principle of changes Hungarian Technical Abst. Vol. 5 1953 in bridge voltage. One of the instruments is used as a thickness gauge and has a range of 100 microns with an accuracy of one micron, A moving soft iron disb with a shaft ending in a hardened steel ball feeler is mounted in the gap between two industance coils facing each other. Any slight movement of the disc changes the c resistance of the coils and thus changes the bridge voltage causing a deflection of the pointer of the connected instrument. The gauge is mounted on an arm which can be traversed along a column for a rough adjustment. The other instrument serves for gauging the thickness of diamagnetic layers (paint, enamel, nonferrous coatings, etc.) over a paramagnetic base. The gauging head is similar to the one described above but the instrument is supported at 3 points; at the iron core of the coils and at the two legs of the iron body. The magnetic circuit of one of the coils is closed by the iron body and the iron disc while the circuit of the other coil is closed by the layer to be gauged (over)









KOSOV, A.P.; MAGAY, L.I.; NIKULIN, B.K.; PAK, M.S.; RUDAKOV, G.M.; SAYFI, E.Kh.; SERGIYENKO, V.A.; SOKOLOV, F.A.; SPIRIDONOV, P.V.; SHPOLYANSKIY, D.M.; TIKHONOVA, I., red.

[Overall mechanization and cultivation practices for cotton crops] Kompleksnaia mekhanizatsiia i agrotekhnika khlop-chatnika. Tashkent, Gos.izd-vo Uzoekskoi SSR, 1964. 407 p. (MIRA 17:11)

1. Sredneaziatskiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva. 2. Sredneaziatskiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva (for all except Tikhonova).

DAVIESON, A. M.; MAGAY, S. A.

Punching instead of cutting out. Mashinostroitel no. 12:29
(MIRA 16:1)

(Forging)

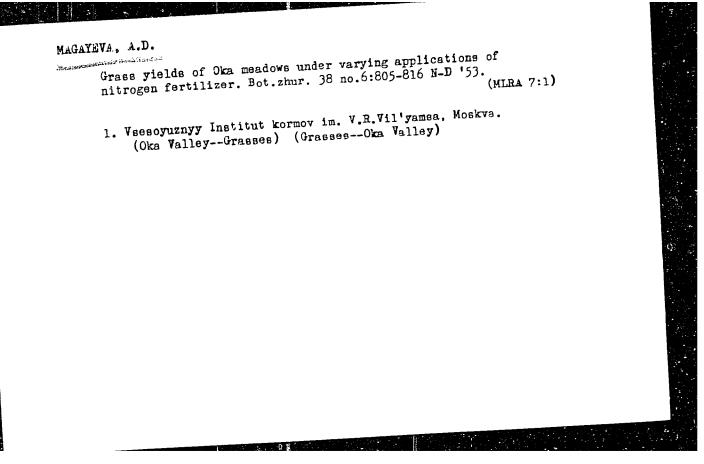
# MACAYEVA, A.D.

The transformation of the botanical composition of grasses in the natural meadows of the Oka River valley under the influence of nitrogen fertilizers

Dok AN SSSR, Vol 80, No 1, 1 Sep 51, p. 81

- 1. MAGAYEVA, A. D.
- 2. USSR (600)
- 4. Meadows
- 7. Effect of nitrogen fertilizers in improving natural meadows. Dost sel'khoz. No. 1 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.



Magayeva, A.D., starshiy nauchnyy sotrudnik

Methods for controlling horse sorrel. Zhivotnovodstvo 23
no.7:35 Jl '61. (MIRA 16:2)

1. Tul'skaya oblastnaya sel'skokhozyaystvennaya opytnaya
stantsiya. (Rumex)
(Weed control)

BLESHINSKIY, S.V.; MAGAYEVA, A.G.

Rapid volumetric analysis of zinc. Report No.1. Izv. AN Kir. SSR. Ser. est. 1 tekh. nauk 5 no.4:35-49 '63.

Rapid volumetric analysis of zinc. Report No.2. (51-58) (MIRA 16:10)

MAGATEVA, S.V. (Moskva)

Features of reactivity of the organism to the toxin of Vibrio comma in a changed environment. Pat.fiziol. i eksp.terap. 3 no.2:52-55 Mr-Ap '59. (MIRA 12:6)

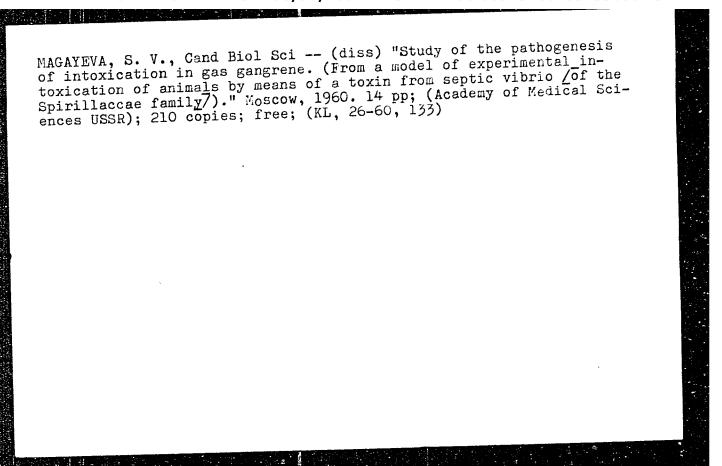
1. Iz laboratorii infektsionnoy patologii (zav. - chlenkorrespondent AMM SSSR prof.A.Ya.Alymov) Instituta normal'noy i patologicheskoy fiziologii AMM SSSR (dir. - deystvitel'nyy chlen AMM SSSR prof.V.N.Chernigovskiy).

(VIBRIO, immunol.

body reactivity to toxin in change of external environoment in rats (Rus))

(MINTRONMENT. eff.

on body reactivity to Vibrio toxin in rats (Rus))



#### MAGAYEVA, S.V.

Parabiotic nature of the nervous system's reaction in the development of intoxication in gas gangrene. Biul.eksp. biol. 1 med. 49 no.2:68-72 F '60. (MIRA 14:5)

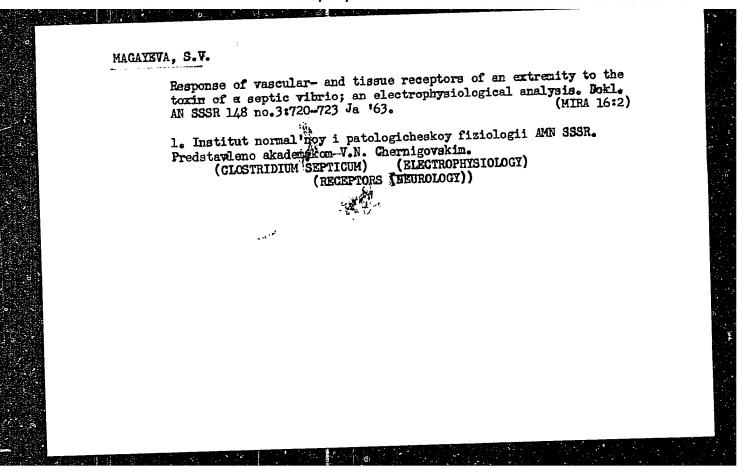
l. Iz laboratorii infektsionnoy patologii (zav. - chlen-korrespondent AMN SSSR prof. A.Ya. Alymov, nauchnyy rukovoditel' - doktor meditsinskikh nauk O.Ya.Ostryy) Instituta normal'noy i patologicheskoy fiziologii (dir. - deystvitel'nyy chlen AMN SSSR V.N.Chernigovskiy) AMN SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR V.N.Chernigovskim.

(GANGRENE) (NERVOUS SYSTEM)

OSTRII, O.YA., SOHIYEVA, Z.I., SKYIESKAIA, E.A., MAGAYETA, S.T., ERRAYAM, S.A., STRUKOVA, L.O., VAKAR, M.D., AZHIFA, TA.I.

"The trophic function of the nervous system and the nervous dystrophic process."

Raport submitted, but not presented at the 22nd International Congress of Physiological Sciences.
Laiden, the Metherlands 10-17 Sep 1962



MAGAYEVA, S.V.

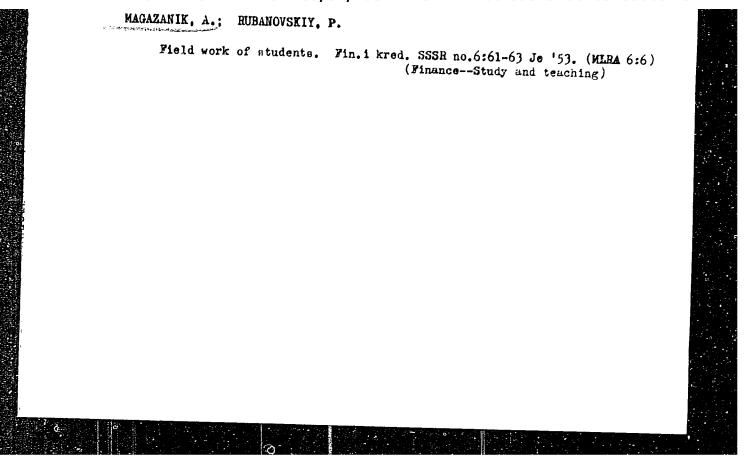
Characteristics of reflex disorders of regional blood circulation during the development of neurodystrophic processes. Trudy Inst. norm.i pat.fiziol. AMN SSSR 7364-65 64. (MIRA 1846)

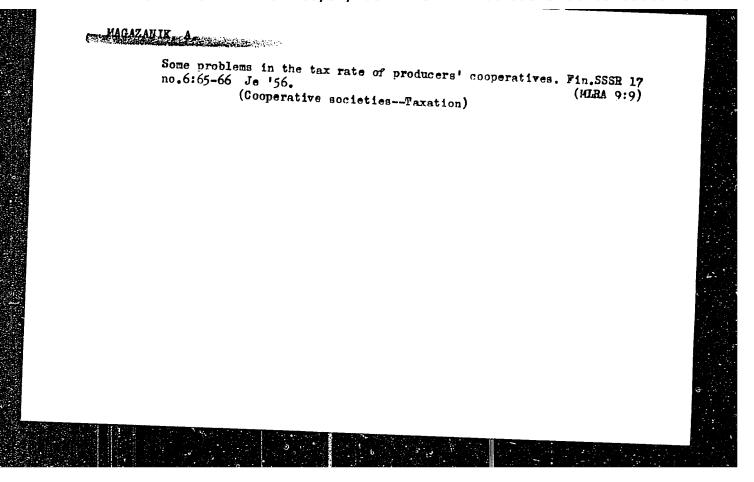
l. Laboratoriya nervnoy trofiki (zav. - prof. C.Ya.Ostryy) Instituta normal'noy i patologicheskoy fiziologii AMN SSSR.

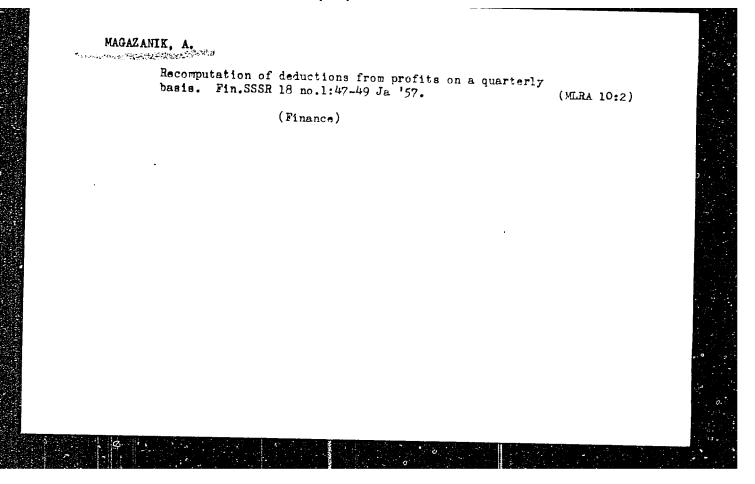
OSTRYI, 0.Ve.; MADAYEVA, 3.V.

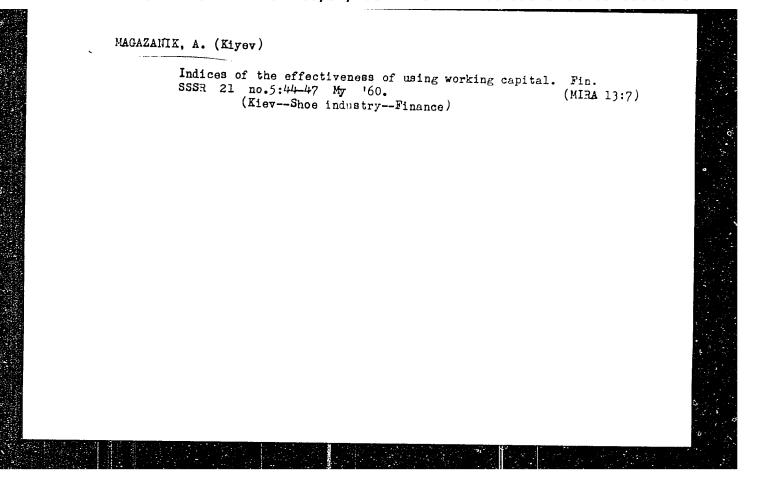
Discriers of afferent signalization in experimental conditioned hypercholesteremie. Trudy Instanormal pat.fiziol. AMN SSSR 7:68-hypercholesteremie. Trudy Instanormal pat.fiziol. AMN SSSR 7:68-69 \*64.

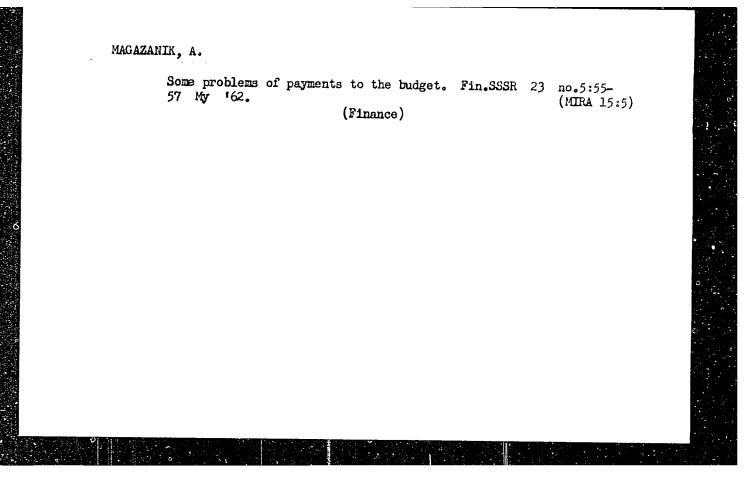
1. Laboratoriya norvany trafiki (pav. - prof. 0.Ye.Ostryy)
Institute normal\*noy i patologicheakoy fiziologii AMN SSSR.











Authors: Magazanik, A. A., Eng., laureate of the Stalin prize.

Title: A device for frequency control in the radio-channels of frequency telegraphy

Periodical: Vest. Svyaz, 5, 9 - 12, May 1954

Abstract: A device for measuring channel frequencies of the high-frequency telegraphy is described. Diagrams, illustrations.

Institution: ....

Submitted: ....

. Magazanik, A.A.

AUTHÓR: Magazanik, A.A.

109-10-19/19

TITLE:

Asynchronous Double-frequency Regimes in the Oscillators having Two Degrees of Freeedom (Ob asinkhronnykh dvukhchastotnykh rezhimakh v avtogeneratorakh s dvumya stepenyami svobody) (Letter to the Editor)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.II, No.10, pp. 1313 - 1316 (USSR)

ABSTRACT: V.V. Anisimov has recently published a paper (Ref.1) dealing with double-frequency, asynchronous oscillations. problem was also investigated in the work of Schaffner (Ref. 2). In both the works, it was shown that: the double-frequency oscillations are only possible in the systems with overcritical excitation; the self-excitation of the oscillations is impossible, and asynchronous oscillations are difficult to obtain experimentally. In the present work, it is shown that the above findings are not always true. A general analysis of the problem is attempted and it is found that in a single-tube oscillator having two degrees of freedom and operating at a low anode voltage and having an automatic grid bias, it is possible to obtain a stable two-frequency operation at a comparatively low excitation. If the oscillator system is such that the anode current is cut off below a certain card1/2grid voltage, again, it is possible to obtain a two-frequency

Asynchronous Double-frequency Regimes in the Oscillators having Two Degrees of Freedom.

operation. It is further found that the existence of a steady-state atwo-frequency regime and its stability are not directly dependent on the difference between the two resonance frequencies  $\omega_1$  and  $\omega_2$  and that, in general, it is not necessary to keep the difference small in order to secure this type of operation.

There are 6 references, 4 of which are Slavic and two references in the footnote on p.1316.

SUBMITTED: February 12, 1957.

AVAILABLE: Library of Congress.

Card 2/2

69176

9,9000

\$/106/59/000/11/011/013

AUTHOR: Magazanik, A.

Letter to the Editor: A Possible Method of Improving the TITLE: Effectiveness of a u.h.f. Meteoric Communication System

PERIODICAL: Elektrosvyaz', 1959, Nr 11, pp 74-77 (USSR)

ABSTRACT: Experimental meteoric-burst communication systems do not, in practice, realise their theoretical capacity for transmitting information. One reason for this is the use of antennaeshaving wide polar diagrams. The effectiveness of the system can be increased by having narrow-beam antennae and rapid-control of their direction, so that with each meteoric burst, the transmission and reception are in the direction of the meteoric trail. In such a system, at the commencement of each burst, the polar diagrams of the transmitter and receiver contract and rapidly turn to the direction of the new burst. The author calls such a system "A Rapid Meteoric-Trail, Volume Selection System BPVMsystem". Such a system has the following advantages: 1. It uses high-gain antennae but preserves the wide-sector

search properties. 2. It is simple to compensate for variation in the propagat-

ion time of the signals.

Mutual interference between systems is reduced. The possibility of constructing such a system is based on

#### 69176

#### S/106/59/000/11/011/013

Letter to the Editor: A Possible Method of Improving the Effectiveness of a u.h.f. Meteoric Communication System

the following premises: 1) The stability of direction is ensured by the fact that for the greater part of meteoric bursts, the reflected signal is strongest at, or nearly at, the beginning of the burst. 2) The operation time of the antenna control apparatus can be an order less than the time of the shortest useable burst, and it is possible to exchange a wide polar diagram with a narrow frequency passband for a narrow polar diagram with a wide information passband. 3) Two meteoric bursts seldom overlap. 4) The transmitter and receiver use the same meteoric trail. 5) As the article shows, variations in the propagation time can be compensated by using information on the angle of incidence (Fig 2). There are 2 figures and 7 English references.

SUBMITTED: May 29, 1959.

ard 2/2

AUTHOR:

Magazanik, A.A.

SOV/109-4-7-4/25

TITLE:

The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 7,

pp 1103 + 1115 + 2 plates (USSR)

ABSTRACT: The aim of this work is to investigate some qualitative aspects of the asynchronous regimes in oscillators with two degrees of freedom. The oscillators are similar to the conservative isochronous systems which can be analysed by assuming a model containing one or several complex non-linear elements. The principal equations for the amplitudes of the investigated systems can be based on the formulae derived by N.M. Krylov and N.N. Bogolyubov (Ref 3), which are in the form:

$$\frac{da_{i}}{dt} = \sqrt[6]{a_{i}} \lambda_{i} (a_{1}, \dots, a_{n}) a_{i} (i = 1, \dots, n) (1).$$

Card1/9

The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

In this,  $a_i$  is the amplitude of the i-th natural oscillation having a frequency  $\omega_i = \omega_{oi}$ ,  $\lambda_1(a)$  are certain amplitude functions which determine the so-called linearised damping coefficients  $\psi_i = -\psi_{oi}\lambda_i(a)$ ,  $\omega_{oi}$  and  $\psi_{oi}$  are the frequencies and the damping coefficients of the natural oscillations in a corresponding linear system (i.e. when  $\lambda_i = -1$ ) and n is the number of degrees of freedom. In this work, only a certain type of the functions  $\lambda_i$  is considered. These are normally encountered in practical systems and can be represented as:

$$\lambda_{i}(a) = \xi_{Bi}L_{Bi}(a) - \xi_{Hi}L_{Hi}(a) - 1$$
 (2)

where  $\xi_{\rm Bi}L_{\rm Bi} \searrow 0$  and  $\xi_{\rm Hi}L_{\rm Hi} \gtrsim 0$  in the investigated Card2/9 region of the amplitudes; the indices "B" and "H"

The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

correspond to the excitation and load elements or functions of the system.  $\xi_{\mbox{\footnotesize{Bi}}}$  and  $\xi_{\mbox{\footnotesize{Hi}}}$  are frequency-dependent coefficients which are determined by the linear elements of the system;  $L_{\mbox{\footnotesize Bi}}$  and  $L_{\mbox{\footnotesize Hi}}$  are homogenised linear functions of resistances  $R_{ri}(a)$  and conductances S (a) of the non-linear elements of the system for the oscillation of frequencies  $\omega_{i}$  . In an asynchronous regime, the resistances and conductances and, consequently, the functions L and  $\lambda$  are independent of the phase of the oscillations. If a system has two non-linear conductances (Figure 1) its  $\lambda_1$  is given by Eq (3). The quantities  $\phi_{\mbox{\footnotesize{Bi}}}$  and  $\eta_{\mbox{\footnotesize{i}}}$  can be determined from the resistances of the system and two parameters  $\chi_{
m Bi}$ X Hi . For the oscillator shown in Figure 2, these Card3/9 parameters are given by the second equation on p 1105.

SOV/109-4-7-4/25 The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

The linearised conductance  $S_{si}$  of an inertialess non-linear element can be expressed by (Ref 3 and Yu.B. Kobzarev - Ref 5):

$$S_{si} = \frac{2}{(2n)^n a_{si}} \int_{-n}^{n} \dots \int_{n}^{n} f_s(E + a_{s1} \cos \theta_1 + \dots + a_{sn} \cos \theta_n) dx$$

+ 
$$a_{sn}\cos\theta_{n}\cos\theta_{i} d\theta_{1} ...d\theta_{n}$$
 (4).

This is valid for a frequency  $\omega_i$  when the non-linear element is subjected to the interaction of n asynchronous oscillations having amplitudes  $a_{s1}, a_{s2}, a_{sn}$  and a constant voltage E. The function  $f_s$  is a non-linear

Card4/9

The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

> quantity which is characterised by a non-linear conductance. The above equations can be employed to investigate three types of non-linear elements:

- a) element of the type "A", such as represented by the anode circuit of a tube operating at a low anode voltage when the anode current can be represented by an exponential function;
- b) an element of the type "B", such as represented by a tube operating with a self-bias and satisfying the condition that the anode current is 0 for the grid voltages lower than the grid cut-off, and
- c) an element of the type  $^{\prime\prime}C^{\prime\prime}$  , which corresponds to the grid circuit of a tube operating in the conditions when the grid current can be approximated by an exponential function.

On the basis of Eq (7), the linearised conductances for the elements of types "A" and "C" can be found from a system of transcendental equations (Eqs 5). In a number of

Card5/9

SOV/109-4-7-4/25 The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

practical cases, Eqs (5) can be solved comparatively simply. In particular, at large amplitudes and large grid-leak resistors  $R_{\text{C}}$ , the elements "A" and "C" can easily be determined; their values are given in the table on p 1108. The solution of Eqs (1) in the case of two degrees of freedom (n = 2) can be represented in the form of graphs plotted in a phase plane. Some qualitative characteristics of such a solution can be determined from the position of the curves of zero attenuation in the phase plane; these curves are branches of the isoclines  $da_2/da_1 = 0$  and  $da_2/da_1 = \infty$ . Some

phase-plane solutions are illustrated in Figures 3. The first seven graphs in Figure 2 are evaluated for the non-linear elements of the type "A" and "C". The remaining 3 graphs illustrate the properties of an oscillator with two degrees of freedom, which contains complex non-linearities. Figure 4 represents a generalised family of basic isoclines  $\lambda_1(a_i, a_i) = 0$ 

Card6/9

The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

for a non-loaded oscillator; the isoclines were evaluated on the basis of Eq (6). The above theory is supported by the experimental results which are shown in the oscillograms of Figures 5, 6 and 7. The oscillograms were taken by employing the oscillator illustrated in Figure 2. It was found that the system could generate single- as well as double-frequency oscillations. The first seven graphs of Figure 3 correspond to the systems in which each of the basic isoclines consists of one stable branch. The first two of these graphs represent the systems with single-frequency oscillations; the remaining graphs illustrate the systems which can have several stable states, including single-frequency as well as double-frequency regimes. The last three graphs of Figure 3 represent the systems in which the basic isoclines have a stable and an unstable branch. The analysis of the systems described above can be carried out if their basic isoclines are known. The calculation of such isoclines may be difficult and it is sometimes necessary to

Card7/9

SOV/109-4-7-4/25 The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

determine them experimentally. The measurements can be effected by two methods. When the damping coefficients of the natural frequencies differ considerably, it is possible to obtain a slowly changing a. This method is illustrated in Figures 7a, B and 2. The isoclines in a system with one degree of freedom can be obtained by introducing an external force having an amplitude a.B. and determining the dependence of a. on a.B. while slowly changing the latter. This type of isocline is shown in Figure 70. The contents of this article were read at the meeting of the Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi imeni A.S. Popova (Scientific-technical Society for Radio-engineering and Electrical Communications imeni A.S. Popov) on May 24, 1957.

Card8/9

SOV/109-4-7-4/25 The Qualitative Theory of the Asynchronous Regimes in the Oscillatory Systems with Two Degrees of Freedom

There are 7 figures, 1 table and 9 references, of which 7 are Soviet and 2 English.

SUBMITTED: August 4, 1958

Card 9/9

9.3260 AUTHOR:

Magazanik, A.A.

SOV/109-4-8-23/35

Some Properties of the Transient Processes in a

Synchronous Oscillator With Two Degrees of Freedom Having Widely Differing Damping Coefficients of the Free Oscillations PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8,

pp 1359 - 1367 + 2 plates (USSR)

ABSTRACT: The approximate calculation of the transients in oscillatory systems with several degrees of freedom, which are near to conservative isochronous systems, can be performed by employing the Krylov and Bogolyubov amplitude equations (Ref 1):

$$\frac{da_i}{dt} = \mathcal{Y}_{oi}\lambda_i \quad (a_1, \ldots, a_n)a_i \quad (i = 1, \ldots, n)$$
 (1)

The calculations can be simplified if the attenuation coefficients of the natural oscillations of the

system differ appreciably from each other. The article deals with the case of two degrees of freedom (n = 2)

Card 1/7

Solv/109-4-8-23/35 Some Properties of the Transient Processes in a Synchronous Oscillator With Two Degrees of Rreedom Having Widely Differing Damping Coefficients of the Free Oscillations

which the approximate solution of Eqs (1) for  $\chi = 0.02/5_{01} > 1$  or  $\chi < 1$  is particularly simple and instructive. This case occurs when one of the partial resonance circuits has a high quality factor in comprison with that of the other, while the de-tuning is sufficiently large. This occurs, for example, in a quartz-crystal oscillator or when the natural frequencies of the partial resonance circuits differ considerably. It is further assumed that  $\chi > 1$ . The notation and the terminology employed is the same as that used in an earlier paper (Ref 3). For n = 2, the equation of the phase trajectories of Eqs (1) is given by:

$$\frac{da_2}{da_1} = \times \frac{\lambda_2(a_1, a_2)a_2}{\lambda_1(a_1, a_2)a_1}$$
 (2).

By analysing this equation, it is found that for  $\chi > 1$ ,

Card2/7

SOV/109-4-8-23/35

Some Properties of the Transient Processes in a Synchronous Oscillator with Two Degrees of Freedom Having Widely Differing Damping Coefficients of the Free Oscillations

the field of the phase trajectories of Eqs (1) has the following properties (see Figures 1,2). In the vicinity of  $a_1$  and near the basic isocline  $\lambda_2=0$ , the phase trajectories tend to converge together and form narrow "streams" which flow along the axis or along the isocline. The axis of the stream is a separatrix. Outside the streams, the phase trajectories ascend or descend steeply, being almost parallel to the axis  $a_2$ . The streams near the stable segments of the basic isocline  $\lambda_2=0$  and near the segments of the axis  $a_1$  are stable in the sense that the phase trajectories entering such streams flow to the nearest steady-state point without emerging from them. The streams near the unstable segments or branches of the isocline  $\lambda_2=0$  and near  $a_1$  where  $a_2>0$  can be

said to be unstable. The phase trajectories can pass along

Card 3/7

SOV/109-4-8-23/35 Some Properties of the Transient Processes in a Synchronous Oscillator with Two Degrees of Freedom Having Widely Differing Damping Coefficients of the Free Oscillations

> a certain length of an unstable stream, but then emerge from it and steeply ascend or descend to the nearest stable stream. An unstable stream is therefore gradually "dried up". The above properties of the phase picture are illustrated in Figures 1 and 2, where Figure 1 was evaluated for a symmetrical oscillator having a low excitation and containing non-linear elements of the type A and C (see Ref 3); the oscillator has three stable steady states, one with two frequencies and two with single frequencies. Figure 2 corresponds to a system with a comparatively low excitation level, which has only one single-frequency steady state. The actual phase trajectory of the case considered, i.e. for  $\times > 1$  and n = 2, can be approximated by a broken line consisting of three segments: vertical straight-line segments B; segments of the axis a1 (C) and segments of the basic isocline  $\lambda_2 = O(N)$  . Examples of the

Card4/7

position of various isoclines and various initial conditions

SOV/109-4-8-23/35 Some Properties of the Transient Processes in a Synchronous Oscillator with Two Degrees of Freedom Having Widely Differing Damping Ocefficients of the Free Oscillations

> are shown in Figures 3. The phase trajectories can be approximately represented by Eqs (6), where a 18H abscissa of the initial point, where a given B segment is started. The solutions of Eqs (1) for the three above segments can approximately be represented by Eqs (7), (8) and (9). By combining the segments and fitting the corresponding solutions, it is possible to obtain the transients. Some of the transients observed experimentally are shown in Figures 5, 6 and 7, while Figure 4 gives some oscillograms of the phase plane. The oscillograms were taken on a controlled quartz-crystal oscillator having two degrees of freedom; the position of the basic isoclines was similar to that of Figure 2. If the corresponds to an unstable stream, segment or stage / the majority of the phase trajectories come out of the stream and go into the segment B at various points of the stream. The position of such a point is strongly

Card5/7

SOV/109-4-8-23/35 Some Properties of the Transient Processes in a Synchronous Oscillator with Two Degrees of Freedom Having Widely Differing Damping Coefficients of the Free Oscillations

dependent on the position of the initial point of the segment A. For A>>1, the probability that the mapping point will come out from the unstable stream near the axis  $a_1$  at its very origin is near to unity.

this holds for a system with a low excitation level with zero boundary conditions. In a system designed for the generation of single-frequency oscillations, the pulses containing the oscillations of the second frequency (which are produced during the transient phenomena) can be regarded as an interference or noise. From the analysis of the equations and the experimental data, it is found that rapid attenuation of the noise or interference pulses is achieved if the segments of the trajectories are eliminated. Further, in order to produce single-frequency oscillations under any initial conditions, it is necessary that the position of the basic isoclines should correspond to those of Figure 2.

Card6/7

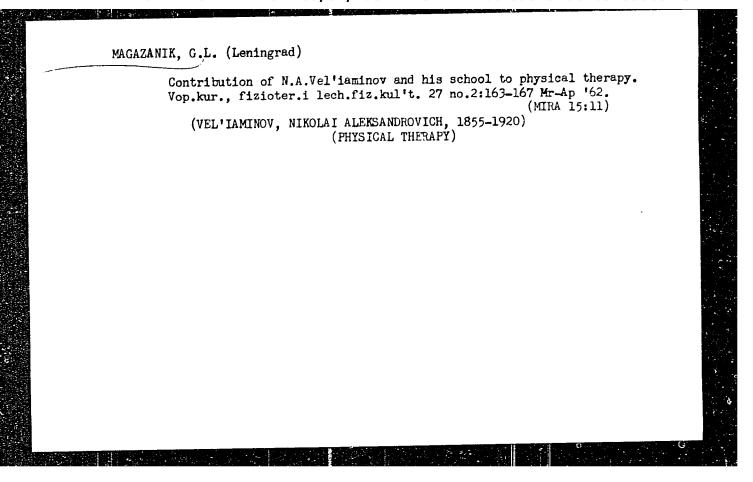
66703

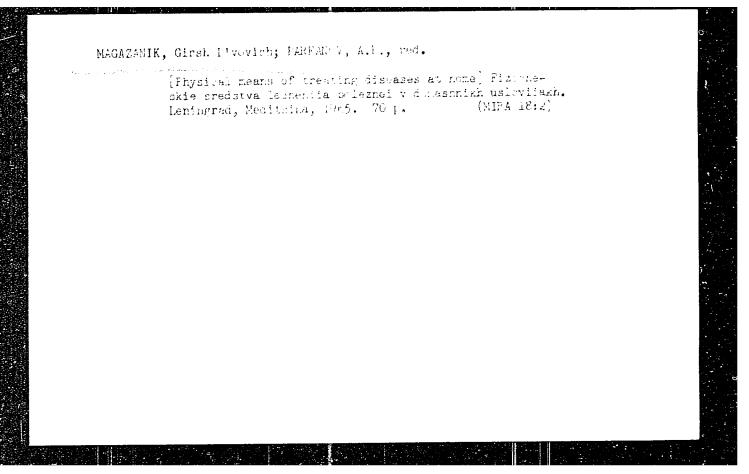
SOV/109-4-8-23/35
Some Properties of the Transient Processes in a Synchronous
Oscillator with Two Degrees of Freedom Having Widely Differing
Damping Coefficients of the Free Oscillations

There are 7 figures and 4 Soviet references.

August 4, 1958 SUBMITTED:

Card 7/7





"Proserin Bronchiospasm as an Experimental Model of an Asthmatic Condition," a report presented at the 570th meeting of the Pharmacology and Toxicology Section, Leningrad Society of Physiologists, Biochemists, and Pharmacologists im. I. M. Sechnov, 9 June 1954, Farm. i Toks., Ju-Aug. 1955, pp. 60-63.

1st Leningrad Medical Institute

Sum. 900, 26, Apr 1956.

MAGAZANIK, L.G., USPENSKAYA, Ye. P. (1st LENINGRAD MED. INST. im. ACAD. I.P. PAVLOV)

"Experimental Therapy of Bronchial Spasm Caused by Anticholinesterae Substances and the Study of Medicinal Means for Treatment of Bronchial Asthma" (Eksperimental naya izyskaniye lekarstvennykh sredstv dlya lecheniya bronkhial noy astmy)

Chemistry and Uces of Organophosphorous Compounds (Khimiya i primeneniye footfororganicheskikh sovednetiy), Trudy of First Conference, 6-10 Recember 1955, Kazan, pp. Published by Kazan Affil. At USSR, 1957 356-365.

MAGAZANIK, L. G., First Leningrad Medical Institute.

"Section of Pharmacology and Toxicology of the Leningrad Society of Physiology, Biochemistry and Pharmacology imeni I. M. Sechenov," Farm. i Toks., v. 9, no 1, 1956, p. 63.

L. G. MAGAZANIK, USSR / Phurmacology, Toxinology, Chalinorgia Draga. Abs Jour : Ref Blur - Flel., No 20, 1958, No 94236 : Usponekaya, Yo. F.; Jagazanik, L. G. Authors : Mot given : Experimental Thoraps of Breachloops ..., Produ-Inst cod by the antichelinesterases, and a Search Title for Medical Proceedant of Bronchial Mathema. : V cb.: Animiya i primonuniya fasiororgan, coyedeneaty. 2., an osen, 1957, 356-305. Orig Rub : The effects of properations of the pontaphene, Abstract diphazine, alphasethyldiphazine, distayla.inoacetydiphocylemide and arpenal groups on bron-chioolasm causea by prescrine on cass were ctudied. It is noted that iodidentkylutes containing quadrivalant altrajen atom possess a more marked medicinal and prophylactic effect than Card 1/2

Ato Juan : Rel Lhur - Tipl., No 20, 1953, No 24239

And Juan : Rel Lhur - Tipl., No 20, 1953, No 24239

Anylomealorides with trivilent altrown. The estimator was the proparations with thribary altrocal was empand and pontuples, and with quantum of itemas, include the interpretate point and potentials. Thus far, only postapone in a dec. 1, 4, 0.50 m 2-4 time per day was regulated to collect was instituted for the duration of one week to two minutes for the treatment of brenchial arthur and it torms out to be quite effective.

MAGAZANIK, L. G., Cand Med Sci (liss) -- "The mechanism and experimental therapy of spasms of the bronchi caused by certain cholinopositive substances". Leningrad, 1960. 16 pp (First Leningrad Med Inst im Acad I. P. Favlov), 300 copies (KL, No 10, 1960, 136)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001031330001-9"

MARMANER, L. J., MAGTRYUK WA, T. A., ROMINITA, YE. K., EVERTIFITY, M. K.,
MEKTELSON, M. YA., KARADHAIT, M. I., YAK WILEY, V. A., YO K. W., R. I.,
GROOTHRIV, M. M. (USER)

"The Significance of Onic Impupend of its Position in an
Anti-Cholinesterase Substance Molecule for its Inter-action
with Cholinesterases and for Charmacologic Effects."

Report presented at the 5th International Biochekistry Increas,
Moscow, 10-16 August 1961

VOLKOVA, R.I.; GODOVIKOV, N.N.; KABACHNIK, M.I.; MAGAZAHIK, L.G.;
MASTRYUKOVA, T.A.; MIKHEL'SON, M.Ya.; ROZHKOVA, Ye.K.;
FRUYEHTOV, N.K.; YAKOVLEV, V.A.

Chemicsl structure and biological activity of phosphorus organic cholinesterase inhibitors. Vop. med. khim. 7 no.3: 250-259 My-Je '61. (MIRA 15:3)

1. Laboratory for the Pharmacology and Biochemistry of Biologically Active Compounds, "I.M. Sechenov" Institute of Evolutionary Physiology, Academy of Sciences of the U.S.S.R., and Laboratory of Organophosphorus, Institute of Elementoorganic Compounds, Academy of Sciences of the U.S.S.R., Leningrad. (CHOLINESTERASES)

(PHOS PHORUS ORGANIC COMPOUNDS)

#### MAGAZANIK, L.G.

Capacity of some cholinolytic substances to prevent experimental bronchial spasms produced by various methods. Farm. i tcks. 24 no.5:541-548 S-0 '61. (MIRA 14:10)

1. Laboratoriya farmkologii i biokhimii biologicheski aktivnykh veshchestv (zav. - prof. M.Ya. Mikhel'son) Instituta evolyutsionnoy fiziologii imeni I.M.Sechenova.

(PARASYMPATHOLYTICS) (BRONCHI)

## MAGAZANIK, L.G.

Effect of adrenaline on cholinergic contraction of skeletal muscles in birds. Dokl. AN SSSR 139 no.2:495-498 Jl '61. (MIRA 14:7)

1. Institut evolyutsionnoy fiziologii im. I.M. Sechenova AN SSSR. Predstavleno akademikom V.N. Chernigovskim. (ADRENALINE) (MUSCLES)